

A REMARKABLE NEW SPECIES OF LEUCOPIS FROM WESTERN
CANADA (DIPTERA: CHAMAEMYIIDAE)

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ABSTRACT—*Leucopis astonea* is described from the Okanagan Valley of southern British Columbia.

Members of the family Chamaemyiidae, sometimes called silver-flies (Tanasijtschuk 1970a), are important because their larvae prey on Homoptera of the superfamilies Aphididoidea and Coccoidea. Their role in the biological control of certain pest species, e.g., the balsam woolly aphid, *Adelges piceae* Ratz., has led to a considerable amount of taxonomic and biological work in recent years. Selected references include the following: Babaev and Tanasijtschuk 1971; McAlpine 1963, 1971; McAlpine and Tanasijtschuk 1972; Sluss and Foote 1971, 1973; Smith 1963; and Tanasijtschuk 1968, 1970c, 1971, 1972, 1974.

Of the 20 or so genera and subgenera that make up the family (McAlpine 1960, Tanasijtschuk 1970b), the genus *Leucopis sens. lat.* is by far the largest and the most common. Adults of most of the species that belong to it are notoriously difficult to recognize because of their small size, uniformity of general appearance, and lack of easily detectable taxonomic characters. In describing the species *L. flavicornis*, Aldrich (1914) stated that "specific characters of the genus *Leucopis* are so obscure and uncertain that one is almost inclined to doubt whether the half dozen species from North America are not really forms of the same one". This is certainly an overstatement but it points up a basic problem in classifying these flies. Today there are about 25 species recorded in the Nearctic Region, and probably several times that number remain to be described.

A new species from British Columbia differs markedly from its congeners in having some rather astonishing features, especially on the head of the male (fig. 1) and female (fig. 2). It is a pleasure to describe such a distinctive member of the genus in honour of Alan Stone, who throughout his long and productive career has made so many outstanding contributions to Dipterology.

Leucopis (Leucopis) astonea McAlpine, new species

Diagnosis: Small, greyish-black species with black antennae, black palpi, uniformly greyish pruinose mesonotum, subshining metallic-black abdomen, milky wings, and yellow tarsi; male with hornlike clump of long setulae on each side of anterior margin of frons (fig. 1); female with palpi greatly enlarged and spatulate (fig. 2).

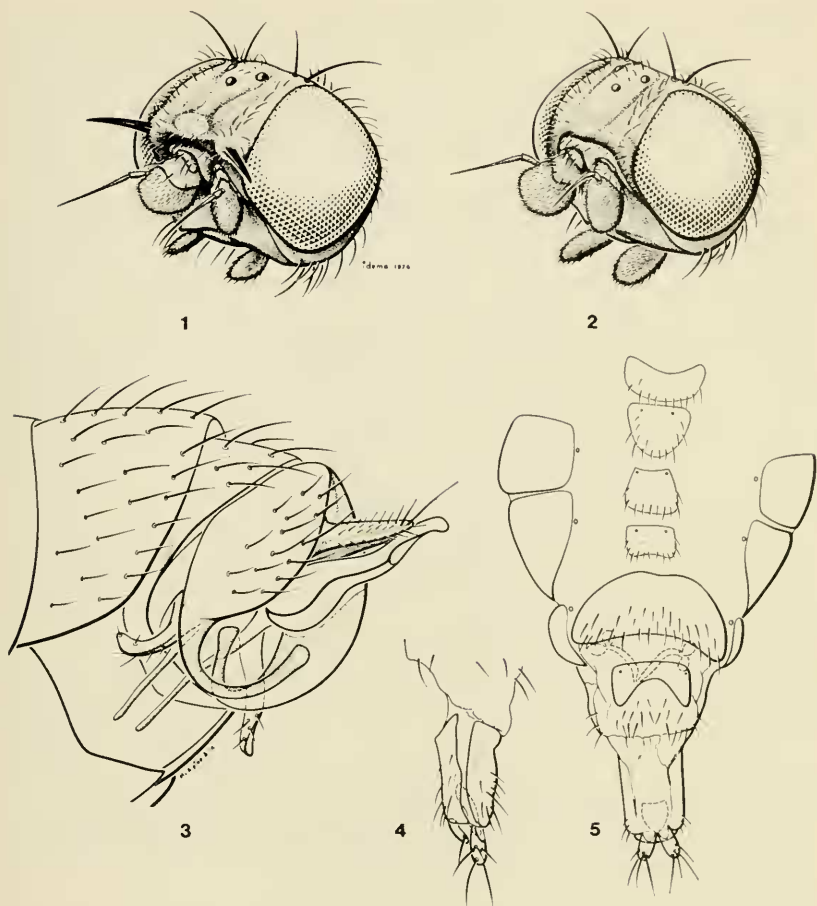


Fig. 1-5, *Leucopis astonea*. 1,2, heads of ♂ (holotype) and ♀ (allotype), respectively, left anterolateral aspect. 3, male genitalia (holotype), left postero-ventral aspect. 4,5, female genitalia (paratype), left lateral and ventral aspects, respectively.

Male: Length about 2.5 mm. Head (fig. 1) almost as long as high, distinctly broader than high. Frons longer than broad, sides diverging from vertex to bases of antennae, anterior margin protruding rooflike above lunule, each side with more or less double row of 7 or 8 tiny, black, outwardly-directed setulae; lower end of each row with pencil of 5-6 relatively long, closely-appressed, anterolaterally-directed, blackish hairs; anterior margin of frons, at middle, with transverse, oval, orange-colored, densely silvery pubescent, sensory spot; middle of frons with large, subshining, frontal plate extending from behind posterior ocelli to median orange spot, its sides gently converging to lateral extremities of orange spot, its disc relatively sparsely pruinose and with sparse, very short, convergent,

whitish hairs. Ocelli reddish, forming a nearly equilateral triangle. Outer verticals at least twice as long and strong as inner ones. Postverticals absent. Lunule shining black on lower half, greyish pruinose along upper border. Face uniformly blackish-grey pruinose, with a graphitelike shininess. Antennae entirely black; 3rd segment almost twice as wide as long on inner face; arista scarcely twice as long as width of 3rd antennal segment; 2nd segment strongly swollen, twice as long as greatest diameter.

Eye slightly higher than long, margin along parafacial rather strongly flattened. Cheek unusually narrow, shortest distance from subcranial cavity to eye margin about $\frac{1}{2}$ width of 3rd antennal segment, with 4 or 5 longish setulae arising posteroventrally. Clypeus shining black. Palpi black, flattened, somewhat spatulate, projecting anterolaterally, inner surface rather silvery shiny.

Thorax uniformly dull, ashy-grey pruinose. Mesonotum uniformly setulose, with 8-10 irregular rows between dorsocentral bristles, these conspicuously sparser in middle at anterior margin of mesonotum and not extending caudad beyond bases of posterior dorsocentral bristles; following bristles present on each side: postpronotals (= humerals) 1, presutural intraalars (= posthumeral) 1, notopleurals 2, postsutural supraalars 2, postsutural intraalars 1, postsutural dorsocentrals 2; anterior dorsocentral about half as long as posterior one. Prescutellar acrostichals absent. Proscutellum strongly developed. Scutellum with the usual 4 bristles. Katepisternum (= sternopleuron) with 1 bristle at upper posterior angle, preceded by several setulae; all other pleural sclerites completely devoid of hairs or bristles. Prosternum broad, somewhat heart-shaped, greyish pruinose, otherwise bare.

Wings dusky-whitish with dark-brown veins. Costa extending to M_{1+2} . Anterior crossvein (r-m) meeting discal cell (1st M_2) near distal third; distance between r-m and posterior crossvein (m-cu) scarcely longer than length of m-cu, and slightly shorter than apical section of M_{3+4} . Halter with yellowish stem and white knob. Calypter white with pale yellow margins and fringes. Legs mainly blackish; extreme apices of all femora yellowish; front and hind tarsi with 2 basal segments yellow; mid tarsus with 3 basal segments yellow.

Abdomen with dorsum very thinly pruinose throughout, entirely subshining black with dark-greenish, metallic lustre in most lights, uniformly coarsely setulose; tergites 2-5 about equal in length.

Genitalia (fig. 3) relatively massive. Epandrium with unusually long, slender, incurved surstylar lobes. Pregonite elongate, with somewhat spatulate, outwardly-directed apex. Postgonite long and slender, spikelike in form. Cerci caudally-directed, extending rooflike over tip of aedeagus. Aedeagus with a broad, stout base, tapering to slender apex; with a suddenly recurved, spoutlike tip.

Female: Agreeing with male in most respects but with following differences: Head (fig. 2) much higher in relation to length. Frons not projecting beyond lunule, meeting latter almost at right angles, with neither specialized pencils of long hairs at anterolateral angles nor discrete sensory area in middle of anterior margin. Face pale silvery pruinose. Palpi greatly enlarged, approaching size of 3rd antennal segment. Abdomen somewhat more thinly pruinose dorsally, and shinier. Genitalia (fig. 4, 5) similar to those of *argenticollis* Zetterstedt (McAlpine and Tanasijtschuk, 1972). Sternum 6 wholly dark-brown to black, heavily sclerotized, and with numerous setulae on posterior half; sternum 7 fairly strongly sclerotized, and deeply emarginate in middle posteriorly. Tergum

7 very weakly sclerotized. Cerci short, strongly divergent, with fine sensory hairs. Spermathecae 2 pairs, small, slightly oval.

Immature stages and biology, unknown.

Types: Holotype ♂, allotype ♀ and one paratype ♀, Vasseau Lake, nr. Oliver, British Columbia, May 14, 1959, R. E. Leech. Deposited in the Canadian National Collection of Insects, Ottawa.

Remarks: *Leucopis astonea* differs from all other known members of the genus in the following peculiar characters: Frons in both sexes with a large, weakly-shining, frontal triangle which extends broadly to lunule; each side of frons with a more or less double row of conspicuous, black, outwardly-directed setulae; male frons with a unique, hornlike pencil of long, appressed hairs projecting from each anterolateral angle, and with a discrete, transverse, oval, orange-colored, sensory area in middle of anterior margin; palpi, especially in female, greatly enlarged. The relationship of *astonea* to other species of the genus is still somewhat obscure, but certainly it belongs in the diverse group of species, including *L. argenticollis* Zetterstedt, *L. atritarsis* Aldrich and *L. piniperda* Malloch, whose larvae are predators of Adelgidae on conifers. All these species have a relatively large, elongate frontal triangle, relatively broad lateral frontal plates bearing rows of fine setulae or hairs, and the frons usually meeting the lunule at a rather sharp angle. In addition, the mesonotum always lacks sublateral brown stripes, and in the female, sternum 6 is heavily sclerotized and sternum 7 is deeply emarginate posteriorly. *Leucopis astonea* shares all these features with them.

The name, *astonea*, is derived from the Middle English word *astonien*, to astonish, astound; happily, and hardly by coincidence, it contains "A. Stone", to whom the species is dedicated.

REFERENCES

- Aldrich, J. M. 1914. A new *Leucopis* with yellow antennae. J. Econ. Entomol. 7(5):404-405.
- Babaev, T. B. and V. N. Tanasijtschuk. 1971. The predatory fly *Leucopis (Leucopomyia) alticeps* (Diptera, Chamaemyiidae), its biology and food relations (in Russian). Zool. Zhurn. 50(10):1520-1529.
- McAlpine, J. F. 1960. A new species of *Leucopis (Leucopella)* from Chile and a key to world genera and subgenera of Chamaemyiidae (Diptera). Can. Entomol. 92(1):51-58.
- . 1963. Relationships of *Cremifania* Czerny (Diptera-Chamaemyiidae) and description of a new species. Can. Entomol. 95(3):239-253.
- . 1971. A revision of the subgenus *Neoleucopis* (Diptera: Chamaemyiidae). Can. Entomol. 103(12):1851-1874.
- McAlpine, J. F. and V. N. Tanasijtschuk. 1972. Identity of *Leucopis argenticollis* and description of a new species (Diptera: Chamaemyiidae). Can. Entomol. 104(12):1865-1875.

- Sluss, T. P. and B. A. Foote. 1971. Biology and immature stages of *Leucopis verticalis* (Diptera: Chamaemyiidae). Can. Entomol. 103(10):1427-1434.
- . 1973. Biology and immature stages of *Leucopis pinicola* and *polystigma* (Diptera: Chamaemyiidae). Can. Entomol. 105(11):1443-1452.
- Smith, K. G. V. 1963. A short synopsis of British Chamaemyiidae (Dipt.). Trans. Soc. Br. Entomol. 15(6):103-115.
- Tanasijtschuk, V. N. 1968. Palearctic species of the genus *Parochthiphila* (Diptera, Chamaemyiidae). Entomol. Obozr. 47(3):633-651. (Eng. Trans. 1969. Entomol. Rev. 47(3):388-399).
- . 1970a. Material contributing to the knowledge of silverflies (Chamaemyiidae, Dipt.) of Poland (In Russian). Fragmenta Faunistica. 16(11):123-143.
- . 1970b. Flies of the family Chamaemyiidae from Mongolia. Ann. Hist.-Natur. Mus. Nat. Hungar. (Zool.), 62:297-316.
- . 1970c. Palearctic species of the genus *Chamaemyia* Panzer (Diptera, Chamaemyiidae) from the collection of the Zoological Institute of the Academy of Sciences, USSR. Entomol. Obozr. 49(1):227-243. (Eng. Trans. 1971. Entomol. Rev. 49(1):128-138).
- . 1971. The predatory fly *Leucopis (Leucopomyia) alticeps* (Diptera, Chamaemyiidae), its biology and food relations. Zool. Zhurn. 50(10):1520-1529.
- . 1972. New species of the genus *Leucopsis* Mg. (Diptera: Chamaemyiidae) from central Asia. Entomol. Obozr. 51(3):654-661. (Eng. Trans. 1974. Entomol. Rev. 51(3):395-398).
- . 1974. On the morphology of eggs of Chamaemyiid-flies (Diptera). Entomol. Obozr. 53(2):304-306. (Eng. Trans. 1975. Entomol. Rev. 53(2):44-48).